

# The Newborn Exam

## Ears :

- Look for any dysmorphic features
- CMV can cause of sensorineural hearing loss & earlier the better for detection & treatment !

## Eyes :

- Red Reflex **Red Flags** : absent, asymmetrical, white, dark spots
- Retinal pigmentation can affect red reflex colour
- Spacing, palpebral fissures

## Mouth :

- Check for facial palsies & asymmetric crying facies
- Check for cleft lip/palate
- Are there features worrisome for feeding ?
- Is there a tongue tie – *this doesn't always need intervention for feeding to be successful*

## Skull :

- Is there microcephaly or macrocephaly?
- Caput? Molding? Cephalohematoma? Subgaleal?
- Is serial head circumference monitoring indicated?
- Sutures – signs of craniosynostosis?
- Fontanelles - Open/Closed, Size, Sunken/Flat/Bulging
- Craniotabes?
- **Red flags** for subgaleal : HC > 1cm growth in 1 hour, trachycardia, boggy

*Thoroughly check for skin lesions & dysmorphic features from head to toe*

## Weight :

- LGA & SGA infants can be at risk for post-natal complications like hypothermia (SGA), hypoglycemia (SGA/LGA), birth trauma, etc.
- Always plot according to GS & on the right graph!

## Abdomen :

- Surgical emergency? Omphalocele, gastroschisis
- Umbilical hernia
- Palpable masses – enlarged liver, spleen
- Scaphoid – diaphragmatic hernia?
- Omphalitis risk factors are non-sterile delivery, maternal infection, umbilical catheterization

## Cardiac : Normal HR 100-160

- Bradycardia : peri-arrest, congenital block, maternal medications, etc.
- Tachycardia : sepsis, shock, subgaleal bleed, heart failure, SVT, medications, etc.
- Murmur : complete pre- & post-ductal sats, 4-limb BPs, CXR, discuss with peds, Ddx includes various congenital heart diseases
- Femoral pulses +/- brachial pulses
- **Signs of heart failure** : tachycardia, cyanosis, hepatomegaly, diaphoresis, irritability, pallor

## Respiratory : Normal RR 30-60

- Respiratory failure is the main cause of cardiac failure in newborns – start NRP right away!
- **Signs of increased work of breathing** : nasal flaring, grunting, head bob, sternal retractions, intercostal indrawing
- Ddx : TTN, MAS, RDS, delayed transition, sepsis, cardiac cause, diaphragmatic hernia, medication side effect (e.g. general anesthesia)

## Genital & Anus :

- Testes descended ? Refer if persistent @ 3-6 months
- Hypospadias ? No circumcision until seen by urology
- Evidence of imperforate hymen
- Is the anus patent ?
- Meconium passage : 95% at 24H & 100% at 48H if term & healthy. Workup required otherwise
- Urine : Delayed urination needs appropriate workup/referral

## Neurological :

- Developmental reflexes
- Tone
- Alertness
- **Sacral ulcer Red Flags** : midline tuft of hair, > 2.5 cm from gluteal cleft, overlying hemangioma, size > 0.5cm, dermal appendage

## Extremities :

- Polydactyly / syndactyly
- Brachial plexus injuries - what grade injury?  
**Always refer if not resolved by 1 month & earlier for all Grade III & IV**
- Broken humerus or clavicle
- Hip stability or risk factor = u/s @ 2-4 months
- Club feet & other foot anomalies

# Key Differentials for Newborn Exam Findings

## Abnormal head shape

- Caput (< 48 hours old)
- Molding (newborn)
- Cephalohematoma (newborn)
- Subgaleal bleed (newborn)
- Positional plagiocephaly (often < 3 months)
- Craniosynostosis (newborn – infant)
- Tortis colis (newborn – infant)

## Large Anterior Fontanelle /Delayed Closure

- Syndrome (e.g. Down syndrome)
- Achondroplasia
- Congenital Hypothyroidism
- Rickets
- Raised ICP
- IUGR
- Malnutrition

## Tachycardia

- SVT
- Sepsis / Fever
- Heart failure
- Shock (any cause)
- Medications (cocaine, caffeine, ephedrine)

## Bradycardia

- Impending cardiac arrest (respiratory failure)
- Maternal BB exposure
- Neonatal lupus causing heart block
- Congenital heart disease
- Sleeping term newborn (rate should improve with stimulation)

## Respiratory Distress

- Transient tachypnea of the newborn
- Respiratory distress syndrome
- Meconium aspiration syndrome
- Persistent pulmonary hypertension of the newborn
- Pneumothorax
- Delayed transision
- Congenital diaphragmatic hernia
- Congenital heart disease
- Anemia
- Medication side effect of labour analgesia

## Newborn Rashes

*Try DermNZ for pictures!*

### Benign

- Erythema toxicum neonatorum
- Transient pustular melanosis
- Millaria
- Lumbosacral dermal melanocytosis
- Naevus simplex

### Need Referral

- Hemangiomas with worrisome features – close to the eyes, segmental on the mandible (risk for also having lesions in airway & syndromes), lumbosacral lesions (association with GU, anal, spinal anomalies)
- HSV
- Blueberry muffin rash

## Macrocephaly

- Familial
- Benign enlargement of subarachnoid space
- Syndromes
- Hydrocephalus
- Intracranial hemorrhage/mass
- Neurocutaneous disorders
- Metabolic conditions...

## Abnormal Red Reflex

- Congenital cataracts
- Retinoblastoma

## Facial Asymmetry

- Stroke
- Asymmetric crying facies
- Facial nerve palsy

## Bulging Fontanelle

- Hydrocephalus
- Hypoxemia
- Meningitis
- Hemorrhage
- Thyroid disease
- Metabolic conditions

## Delayed Void

- Acute renal injury
- Dehydration
- Hypotension (any cause)
- Renal agenesis
- Renal artery or venous thrombosis
- Obstructive uropathy (e.g. posterior urethral valves)
- Has simply been observationally missed

## Delayed Meconium

- MgSO4 exposure
- Meconium plug syndrome
- Meconium ileus
- Hirschsprung's disease
- Functional ileus
- Hypothyroidism
- Anal atresia
- Volvulus ...



## Image Sources :

1. <https://indianexpress.com/article/parenting/family/taking-the-baby-out-this-winter-keep-these-pointers-in-mind-6201767/>
2. <https://www.behindtheshutter.com/studio-workflows-for-smoother-newborn-sessions/>
3. <https://babygooroo.com/articles/when-will-my-baby-learn-to-sit>

## References

1. Amit M, Canadian Paediatric Society, Community Paediatrics Committee. Vision screening in infants, children and youth. *Paediatr Child Health* 2009;14(4):246-248. Reaffirmed 2018. <https://cps.ca/documents/position/children-vision-screening>
2. BC Children's Hospital. A clinician's guide to positional plagiocephaly : Everything you need to understand, prevent, identify, and treat positional plagiocephaly. <http://www.bcchildrens.ca/neurosciences-site/Documents/BCCH034PlagiocephalyCliniciansGuideWeb1.pdf>. June 2008
2. Braga LH, Lorenzo AJ, Romao RLP. Canadian urological association-pediatric urologists of Canada (CUA-PUC) guideline for the diagnosis, management, and follow-up of cryptorchidism. *Can Urol Assoc J*. 2017;11(7):E251-60. [https://www.cua.org/system/files/Guideline-Files/4585\\_cryptorchidism.pdf](https://www.cua.org/system/files/Guideline-Files/4585_cryptorchidism.pdf)
3. Buchanan EP. Overview of craniosynostosis. Editors Weisman LE, Firth HV. [https://www.uptodate.com/contents/overview-of-craniosynostosis?search=craniosynostosis&source=search\\_result&selectedTitle=1~64&usage\\_type=default&display\\_rank=1#H1377304](https://www.uptodate.com/contents/overview-of-craniosynostosis?search=craniosynostosis&source=search_result&selectedTitle=1~64&usage_type=default&display_rank=1#H1377304). Updated May 4, 2021.
4. Canadian Pediatric Neurosurgery Study Group. Five things physicians and patients should question. Choosing Wisely website. Last updated 2018. <https://choosingwiselycanada.org/wp-content/uploads/2017/05/Pediatric-neurosurgery.pdf>
5. Centers for Disease Control and Prevention. Birth Defects : Microcephaly. <https://www.cdc.gov/ncbddd/birthdefects/microcephaly.html>. Last updated October 23, 2020.
6. Centre of Disease Control and Prevention. Facts about craniosynostosis. <https://www.cdc.gov/ncbddd/birthdefects/craniosynostosis.html>. Last updated October 23, 2020.
7. CMV Programs : BC Children's Pilot Program for CMV testing <http://www.bcchildrens.ca/about/news-stories/stories/improving-hearing-in-newborns>
8. Dominguez M. Neonatal Birth Injuries. <https://step2.medbullets.com/pediatrics/121783/neonatal-birth-injuries>. Updated December 29, 2021.
9. Drutz JE. The pediatric physical examination: HEENT. Editor Duryea TK. Last updated July 2021. [https://www.uptodate.com/contents/the-pediatric-physical-examination-heent?search=red%20light%20reflex%20&source=search\\_result&selectedTitle=1~150&usage\\_type=default&display\\_rank=1#H20](https://www.uptodate.com/contents/the-pediatric-physical-examination-heent?search=red%20light%20reflex%20&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1#H20)
10. Grantt Sm Bitnun A, Renaud C, Kakkar Fm Vaudry W. Diagnosis and management of infants with congenital cytomegalovirus infection. *Paediatrics & Child Health*.2017;22(2):72-72. doi: 10.1093/pch/pxx002
11. Geggle RL. Common causes of cardiac murmurs in infants and children. Eds. Fulton DR. Uptodate. [https://www.uptodate.com/contents/common-causes-of-cardiac-murmurs-in-infants-and-children?search=neonatal%20murmur&sectionRank=1&usage\\_type=default&anchor=H3923974616&source=machineLearning&selectedTitle=1~150&display\\_rank=1#H3923974616](https://www.uptodate.com/contents/common-causes-of-cardiac-murmurs-in-infants-and-children?search=neonatal%20murmur&sectionRank=1&usage_type=default&anchor=H3923974616&source=machineLearning&selectedTitle=1~150&display_rank=1#H3923974616). Last updated April 21, 2021.
12. Gomella TL, Cunningham MD, Eyal FG, Tuttle DJ. Neonatology: Management, procedures, on-call problems, diseases, and drugs, 7e. Chapter 68: No urine output in 24 hours. 2013. McGraw-Hill Education LLC. US. <https://accesspediatrics.mhmedical.com/content.aspx?bookid=1303&sectionid=79662337>
13. Haba J. Approach to pediatric tachycardia. UBC learn pediatrics. <https://learn.pediatrics.ubc.ca/body-systems/cardiology/approach-to-pediatric-tachycardia/>. Last updated August 17, 2011.
14. Hermanse CL, Lorah KN. Respiratory distress in the newborn. *Am Fam Physician*. 2007;76(7):987-994. <https://www.aafp.org/afp/2007/1001/p987.html>
15. Hijazi ZM. Clinical manifestations and diagnosis of coarctation of the aorta. Eds. Fulton DR, Connolly HM. [https://www.uptodate.com/contents/clinical-manifestations-and-diagnosis-of-coarctation-of-the-aorta?search=coarctation%20of%20aorta&source=search\\_result&selectedTitle=1~150&usage\\_type=default&display\\_rank=1#H9](https://www.uptodate.com/contents/clinical-manifestations-and-diagnosis-of-coarctation-of-the-aorta?search=coarctation%20of%20aorta&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1#H9). Last updated March 22, 2021.
16. Holmes N. Clinical presentation and diagnosis of posterior urethral valves. Ed. Baskin LS. Uptodate. [https://www.uptodate.com/contents/clinical-presentation-and-diagnosis-of-posterior-urethral-valves?search=newborn%20obstructive%20uropathy&sectionRank=1&usage\\_type=default&anchor=H20&source=machineLearning&selectedTitle=1~150&display\\_rank=1#H20](https://www.uptodate.com/contents/clinical-presentation-and-diagnosis-of-posterior-urethral-valves?search=newborn%20obstructive%20uropathy&sectionRank=1&usage_type=default&anchor=H20&source=machineLearning&selectedTitle=1~150&display_rank=1#H20). Last updated August 27, 2020.
17. How to test for the red reflex in a child. *Community Eye Health*. 2014;27(86):36. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4194850/>
18. Isaacson GC. Ankyloglossia (tongue-tie) in infants and children. Editor Messner AH. [https://www.uptodate.com/contents/ankyloglossia-tongue-tie-in-infants-and-children?search=ankyloglossia&source=search\\_result&selectedTitle=1~16&usage\\_type=default&display\\_rank=1#H3](https://www.uptodate.com/contents/ankyloglossia-tongue-tie-in-infants-and-children?search=ankyloglossia&source=search_result&selectedTitle=1~16&usage_type=default&display_rank=1#H3). Last updated March 12, 2021.
19. Isaacson GC. Congenital anomalies of the ear. Editors Messner AH, Firth HV. [https://www.uptodate.com/contents/congenital-anomalies-of-the-ear?sectionName=Preauricular%20pits&search=newborn%20head%20molding&topicRef=4984&anchor=H9&source=see\\_link#H9](https://www.uptodate.com/contents/congenital-anomalies-of-the-ear?sectionName=Preauricular%20pits&search=newborn%20head%20molding&topicRef=4984&anchor=H9&source=see_link#H9). Last updated January 21, 2022.
20. Jadcherla SR. Neonatal oral feeding difficulties due to sucking and swallowing disorders. Editor Abrams SA. [https://www.uptodate.com/contents/neonatal-oral-feeding-difficulties-due-to-sucking-and-swallowing-disorders?search=newborn%20suck&source=search\\_result&selectedTitle=1~150&usage\\_type=default&display\\_rank=1#H1](https://www.uptodate.com/contents/neonatal-oral-feeding-difficulties-due-to-sucking-and-swallowing-disorders?search=newborn%20suck&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1#H1). Last updated March 21, 2020.
21. Jones S, Samanta D. Macrocephaly. [Updated 2021 Jul 30]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK560786/>
22. Kaufman PL, Kim J, Berry JL. Approach to the child with leukocoria. Edito Paysse EA. Last updated April 5, 2021. [https://www.uptodate.com/contents/approach-to-the-child-with-leukocoria?search=red%20light%20reflex%20&source=search\\_result&selectedTitle=2~150&usage\\_type=default&display\\_rank=2](https://www.uptodate.com/contents/approach-to-the-child-with-leukocoria?search=red%20light%20reflex%20&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2)
- Kotagal S. Neurologic examination of the newborn. Eds. Garcia-Prats JA, Nordli DR. Uptodate. [https://www.uptodate.com/contents/neurologic-examination-of-the-newborn?search=newborn%20exam&topicRef=4984&source=see\\_link](https://www.uptodate.com/contents/neurologic-examination-of-the-newborn?search=newborn%20exam&topicRef=4984&source=see_link). Last updated May 21, 2020.
23. Lemyre B, Jefferies AL, O'Flaherty P, Canadian Paediatric Society, Fetus and Newborn Committee. Facilitating discharge from hospital of the healthy term infant. *Paediatr Child Health*. 2018;23(8):515-522. <https://cps.ca/documents/position/facilitating-discharge-from-hospital-of-the-healthy-term-infant>
24. Lipsett BJ, Reddy V, Steanson K. Anatomy, Head and Neck, Fontanelles. [Updated 2021 Jul 26]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK542197/>
25. Loening-Baucke V, Kimura K. Failure to pass meconium: Diagnosing neonatal intestinal obstruction. *Am Fam Physician*. 1999;60(7):2043-2050. <https://www.aafp.org/afp/1999/1101/p2043.html>

## References

26. Maternal Newborn Child & Youth Strategic Clinical Network. Alberta Pregnancy Pathways. <https://www.albertahealthservices.ca/assets/about/scn/ahs-scnc-mnccy-pp-nb-pathway.pdf>. September 2020.
27. Mathes E, Howard RM. Vesicular, pustular, and bullous lesions in the newborn and infant. Eds. Levy ML, Edwards MS. UptoDate. [https://www.uptodate.com/contents/vesicular-pustular-and-bullous-lesions-in-the-newborn-and-infant?search=newborn%20rashes&source=search\\_result&selectedTitle=1~150&usage\\_type=default&display\\_rank=1](https://www.uptodate.com/contents/vesicular-pustular-and-bullous-lesions-in-the-newborn-and-infant?search=newborn%20rashes&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1). Last updated December 3, 2018.
28. McKee-Garrett, T. Assessment of the newborn infant. Editors Martin R, Duryea TK. [https://www.uptodate.com/contents/assessment-of-the-newborn-infant?search=newborn%20head%20molding&source=search\\_result&selectedTitle=1~150&usage\\_type=default&display\\_rank=1#H866248920](https://www.uptodate.com/contents/assessment-of-the-newborn-infant?search=newborn%20head%20molding&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1#H866248920). Last updated October 7, 2021.
29. McKee-Garrett, TM. Neonatal birth injuries. Editors Weisman LE, Phillips WA, Patterson MC. [https://www.uptodate.com/contents/neonatal-birth-injuries?search=cephalohematoma&source=search\\_result&selectedTitle=1~23&usage\\_type=default&display\\_rank=1#H7](https://www.uptodate.com/contents/neonatal-birth-injuries?search=cephalohematoma&source=search_result&selectedTitle=1~23&usage_type=default&display_rank=1#H7) Last updated November 23, 2021.
30. Metry DW. Infantile hemangiomas: epidemiology, pathogenesis, clinical features, and complications. Ed. Levy ML. UptoDate. [https://www.uptodate.com/contents/infantile-hemangiomas-epidemiology-pathogenesis-clinical-features-and-complications?search=hemangioma&source=search\\_result&selectedTitle=2~150&usage\\_type=default&display\\_rank=2#H7](https://www.uptodate.com/contents/infantile-hemangiomas-epidemiology-pathogenesis-clinical-features-and-complications?search=hemangioma&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2#H7). Last updated November 20, 2020.
31. Mulpuri K. Screening for developmental dysplasia of the hip: an evidence-based approach to practice. UBC CPD This Changed my Practice. 2016. <https://thischangedmypractice.com/developmental-dysplasia-of-the-hip/>.  
Nabi SM. Approach to cardiac murmurs. Ed. Bishop J. UBC learn pediatrics. <https://learn.pediatrics.ubc.ca/body-systems/cardiology/approach-to-cardiac-murmurs/>. Last updated February 9, 2011.
32. Narvey MR, Marks SD, Canadian Paediatric Society, Fetus and Newborn Committee. Paediatr Child Health. 2019;24(8):536-544. <https://cps.ca/documents/position/newborns-at-risk-for-low-blood-glucose>.
33. Narvey M, Wong K, Fournier A, Fetus and Newborn Committee. Pulse oximetry screening in newborns to enhance detection of critical congenital heart disease. Paediatrics & Child Health. 2017;22(8):494-498. <https://cps.ca/documents/position/pulse-oximetry-screening>
34. Nelson CRM, Demarsh A, Miller SP, Morris SK, Moore Hepburn C, Bitnun A, Moore A, et al. Small bite, big problem: Understanding severe microcephaly in Canada. Paediatrics & Child Health. 2017; 504-505. <https://pcsp.cps.ca/uploads/publications/Highlight-Understanding-severe-microcephaly-in-Canada.pdf>
35. Newborn screening Ontario. Hearing Loss RTisk Factor Screening. <https://www.newbornscreening.on.ca/en/page/congenital-cytomegalovirus>. Last updated 2022.
36. Ngan V. Lumbosacral dermal melanocytosis. DermNet NZ. <https://dermnetnz.org/topics/lumbosacral-dermal-melanocytosis>. Last updated 2003.
- Oakley A. Infantile haemangioma : definition and pathogenesis. DermNet NZ. <https://dermnetnz.org/topics/infantile-haemangioma-definition-and-pathogenesis>. Last updated January 2021 by Gangakedkar A.
37. Ostermaier KK. Down syndrome: Clinical features and diagnosis. Editors Drutz JE, Firth HV. [https://www.uptodate.com/contents/down-syndrome-clinical-features-and-diagnosis?search=dysmorphic%20features&source=search\\_result&selectedTitle=2~150&usage\\_type=default&display\\_rank=2](https://www.uptodate.com/contents/down-syndrome-clinical-features-and-diagnosis?search=dysmorphic%20features&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2). Last updated December 14, 2020.
38. Palazzi DL, Brandt ML. Care of the umbilicus and management of umbilical disorders. Eds. Duryea TK, Martin R. UptoDate. [https://www.uptodate.com/contents/care-of-the-umbilicus-and-management-of-umbilical-disorders?sectionName=Omphalitis&search=completing%20newborn%20vitals%20&topicRef=4984&anchor=H30&source=see\\_link#H30](https://www.uptodate.com/contents/care-of-the-umbilicus-and-management-of-umbilical-disorders?sectionName=Omphalitis&search=completing%20newborn%20vitals%20&topicRef=4984&anchor=H30&source=see_link#H30). Last updated August 27, 2021.
39. Provincial Health Services Authority. Hearing Testing. <http://www.phsa.ca/our-services/programs-services/bc-early-hearing-program/hearing-testing>. Last updated 2022.
40. Purvis D. Blueberry muffin syndrome. DermNet NZ. <https://dermnetnz.org/topics/blueberry-muffin-syndrome>. Last updated 2010.
41. Ratan NM. Infantile bradycardia causes, diagnosis, symptoms, and treatment. NEWS medical life sciences. <https://www.news-medical.net/health/Infantile-Bradycardia-Causes-Diagnosis-Symptoms-and-Treatment.aspx#2>. Last updates August 15, 2019.
42. Roth DA, Lubin D, Kuint J, Teperberg-Oikawa M, Mendelson E, Strauss T, Barkai G. Contribution of targeted saliva screening for congenital CMV-related hearing loss in newborns who fail hearing screening. *Dis Child Fetal Neonatal Ed.* 2017;102:F519-524. doi:10.1136/archdischild-2016-311859
43. Rowan-Legg A, Canadian Paediatric Society, Community Paediatrics Committee. Position statement : Ankyloglossia and breastfeeding. 2015;20(4):209-13. <https://cps.ca/en/documents/position/ankyloglossia-breastfeeding>
44. Shah V, Coroneos CJ, Ng E, Canadian Paediatric Society, Fetus and Newborn Committee. The evaluation and management of neonatal brachial plexus palsy. *Pediatr Child Health.* 2021;26(8):493-497. <https://cps.ca/en/documents/position/neonatal-brachial-plexus-palsy>
45. Sood MR. Constipation in infants and children: Evaluation. Ed. Li BUK. UptoDate. [https://www.uptodate.com/contents/constipation-in-infants-and-children-evaluation?search=delayed%20passage%20of%20meconium&source=search\\_result&selectedTitle=1~150&usage\\_type=default&display\\_rank=1](https://www.uptodate.com/contents/constipation-in-infants-and-children-evaluation?search=delayed%20passage%20of%20meconium&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1). Last updated March 5, 2021.
46. Stephenson CD, Lockwood CJ, MacKenzie AP. Gastroschisis. Eds. Wilkins-Haug L, Levine D. UptoDate. [https://www.uptodate.com/contents/gastroschisis?search=omphalocele%20gastroschisis&source=search\\_result&selectedTitle=1~95&usage\\_type=default&display\\_rank=1#H11](https://www.uptodate.com/contents/gastroschisis?search=omphalocele%20gastroschisis&source=search_result&selectedTitle=1~95&usage_type=default&display_rank=1#H11). Last updated August 18, 2021.
47. Weitzman C, Rojmahamongkol P. Fetal alcohol spectrum disorder: Clinical features and diagnosis. Editor Voigt RG. [https://www.uptodate.com/contents/fetal-alcohol-spectrum-disorder-clinical-features-and-diagnosis?search=FASD%20exam&source=search\\_result&selectedTitle=2~150&usage\\_type=default&display\\_rank=2](https://www.uptodate.com/contents/fetal-alcohol-spectrum-disorder-clinical-features-and-diagnosis?search=FASD%20exam&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2). Last updated April 28, 2020.
48. World Health Organization. The history of zika virus. <https://www.who.int/news-room/feature-stories/detail/the-history-of-zika-virus>. February 7, 2016.
49. Wu W, Oakley A. Naevus simplex. DermNet NZ. <https://dermnetnz.org/topics/naevus-simplex>. Last updated 2019.